MINISTRY OF WORKS

Trees in Richmond Park

FIFTH REPORT OF THE ADVISORY COMMITTEE ON FORESTRY

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MINISTRY OF WORKS

Advisory Committee on Forestry

SIR WILLIAM LING TAYLOR, C.B.E., F.R.I.C.S., (*Chairman*) Former Forestry Commissioner and Director General of the Forestry Commission, Past President of the Society of Foresters of Great Britain.

MR. R. C. B. GARDNER, O.B.E.,
Former Secretary of the Royal Forestry Society of England and Wales.

LORD HURCOMB, G.C.B., K.B.E.,
Chairman of the Nature Conservancy, Chairman of the Committee on Bird Sanctuaries in the Royal Parks.

MR. G. A. JELLICOE, C.B.E., F.R.I.B.A., M.T.P.I., P.P.I.L.A.,
Past President of the Institute of Landscape Architects, Member of the Royal Fine Art Commission.

MR. A. D. C. LE SUEUR, O.B.E., F.R.I.C.S.,
Consultant in Arboriculture.

MR. J. MACDONALD, C.B.E., F.R.S.E.,
Deputy Director General, Forestry Commission.

DR. GEORGE TAYLOR, D.Sc., F.R.S.E., F.L.S.,
Director, Royal Botanic Gardens, Kew.

Secretary: MR. T. L. JONES (Ministry of Works).

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FIFTH REPORT

RICHMOND PARK

To the Right Honourable LORD JOHN HOPE, M.P.

SIR,

1. When your predecessor, the Right Honourable Hugh Molson, M.P., reappointed us in 1959 for a further term of office be asked us to consider, on the lines of our Fourth Report on Kensington Gardens,[1] the problems of long-term arboricultural management in Richmond Park, Busby Park and Greenwich Park. In accordance with his wisbes we have given priority to Richmond Park, and beg to submit our Report. This restates and amplifies the observations and recommendations on Richmond Park contained in our Second Report ;[2] a summary of these recommendations is given in Appendix I. We note with pleasure that most of them have been carried out.

Historical Note

2. Richmond Park was formed by Charles I a few years before the Civil War, and its boundary wall was completed in 1637. Tbe land enclosed comprised some waste ground and common lands and certain estates, some of which the King had difficulty in acquiring. From the first it was probably well furnished with trees, among which oaks predominated. In the century following its enclosure there are references to felling, but none to plantings ; in fact it is doubtful whether mucb planned planting was carried out before the reign of George III. Maps of this period show trees growing sparsely in the north part of the Park, with a wood to the north of Pen Ponds running east and west as far as White Lodge, wbence the Queen's Ride runs westward through the wood. It is probable that Duchess Wood and the old woods south of the Sawpits Plantations are in part the survivors of this wood. To the west and south-west of the Ponds the trees appear sparse as far as the Richmond Gate-Ham Gate road, but to the south of the Ponds the timber stands more thickly on the ground. The grounds between Petersham and Pembroke Lodges and the then Park boundary are thickly wooded and were probably planted not later than 1740. The ground near Roehampton Gate and to the south-east for some distance appears to have been bare of trees. A map of 1754[3] shows two small enclosed plantations, one to the south of Old Lodge and the other roughly at Killcat Corner. The avenue whicb still

[1] "Trees in Kensington Gardens" (Ministry of Works); London, Her Majesty's Stationery Office, 1959, Price 1s. 6d.

[2] "Second Report of the Advisory Committee on Forestry" (Ministry of Works); London, Her Majesty's Stationery Office, 1955, Price 6d.

[3] J. Eyre: A map of His Majesty's New Park at Richmond ; London, 1754.

survives, from Henry VIII Mount to Oliver's Mount, was also in existence at that time.

3. Tree-planting on a large scale seems to have been initiated in the reign of George III, and a map of 1794[1] shows several woods which did not appear on the map of 1754. These are concentrated principally on the northern boundary of the Park, between Richmond Hill Gate and Roehampton Gate, and in the northern area, which is shown to be almost entirely wooded. High Wood and the dispersed trees inward from the boundary between Robin Hood Gate and Kingston Gate are probably the survivors of this southern wood.

4. In 1813 Lord Sidmouth was appointed Deputy Ranger and began the systematic establishment of plantations, a policy which continued, with one break of about twenty years, throughout the century, and added more than twenty plantations. A nursery for oak trees was also established in 1824.

5. In 1834 Petersham Park was added to Richmond Park, the fence and trees dividing the two were removed, and a terrace walk of beech was planted from Richmond Gate to Poet's Corner. The Hornbeam Walk, which follows the old boundary southward from Pembroke Lodge, may have been planted at this time as a continuation of this avenue.

6. Records up to the end of the nineteenth century show that maintenance planting, as well as the establishment of new plantations, was then in hand. In 1897/98 40 oaks, 2 dozen maples and 5 dozen conifers were planted; in 1898/99 oaks and ornamental trees; and in 1899/1900 30 oaks and 50 thorns. The policy was then to plant groups and isolated trees, with only occasional plantations. After the turn of the century the establishment of new plantations — apart from "ceremonial" plantings — seems to have ceased. It was towards the end of the nineteenth century that the practice of commemorating Royal occasions by small plantations was instituted; the first of them commemorates the 1887 Jubilee.

7. In 1931 a survey was made with a view to identifying and ultimately treating or felling trees that were in an unhealthy state. This showed that a high proportion of the trees were in need of some treatment. After consultation with the Royal Botanic Gardens, a fresh planting policy was evolved. This covered the perpetuation of the general distribution of trees, the use of indigenous rather than exotic trees, and the development of "succession" plantations, with old plantations being thrown open and new ones established to take their place. From 1931/32 to 1940/41 the average number of trees planted yearly was about 400.

8. Between 1941 and 1945 planting almost ceased, but in 1946 it was decided that time lost should be regained by the establishment of two new ten-acre woods. These were Queen Elizabeth Wood, planted in 1948, and Prince Charles' Spinney, planted in 1949/50. The policy recently followed in accordance with the recommendations of the Committee has stressed the planting of trees in such a way as to maintain the traditional appearance of the open parts of the Park. This has resulted in the planting of about 9,500 trees in the last 10 years.

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[1] G. Richardson: A plan of the Freebord of His Majesty's Park at Richmond; London, 1794.

9. A list of the principal plantations with their dates of planting will be found in Appendix II.

The Soils

10. The appearance of the Park and its vegetation are greatly influenced by the soil, and we are indebted to Mr. R. A. Jarvis of the Soil Survey of England and Wales for a report[1] on the parent materials and distribution of the soils of the area. Details and a specially prepared map will be found in Appendix III.

11. Briefly, the London Clay forms the solid geological formation outcropping throughout almost the entire area of Richmond Park, with the exception of the steep slope near Thatchedhouse Lodge where there is a small exposure of the Claygate Beds. Where it is undisturbed the London Clay is a blue-grey silty clay up to approximately 15 ft. from the surface. Above that level it changes fairly abruptly to weathered brown clay, but the formation is frequently masked by a grey-coloured drift consisting mainly of soliflucted London Clay.

12. Sand and gravel occur on level ground at three main elevations. The highest, approximately 170 ft. above sea level, is found in the vicinity of Pembroke Lodge and adjoining Kingston Hill, and comprises the deposit described by the Geological Survey as "Fluvioglacial gravel with Bunter pebbles". The second level, at approximately 120 ft above sea level, corresponds to the Boyn Hill Terrace of the Thames and forms the high ground north of Bog Lodge, together with White Lodge Hill and Spankers Hill. The third level, at approximately 60 ft. above sea level, comprises the relatively high ground at East Sheen Gate and is part of the Taplow Terrace of the Thames.

13. The intervening land connecting these terraces consists of gently sloping surfaces of London Clay; about half of this area has a covering of 10-30 in. of a sandy drift, probably derived from the terraces themselves.

14. In certain depressions a more variable drift has accumulated consisting of clayey gravel, made of angular flint fragments and sometimes bound by an iron pan, overlain by loamy sand. The low-lying land, at the foot of the London Clay slopes in the vicinity of Beverley Brook, consists of a deposit of gravel which is obscured by clayey drift from the adjacent slopes. Recent alluvium is found in a belt running through the lowest part of the golf courses and near Ham Gate.

15. In general the soils of Richmond Park are characterized by low fertility, due to low reserves of plant nutrients or to poor natural drainage, and in most cases to both.

Flora and Fauna

Flora

16. The vegetation of the Park, as might be expected from its position and past history, has been profoundly modified by man's influence, and this is manifest everywhere. Apart from the plantations, which are clearly

[1] Copies of the full report are available for consultation in the Libraries of the Ministry of Works and the Soil Survey of England and Wales (Rothamstead Experimental Station).

artificially planted, the ground is occupied mainly by different types of grasslands. These are almost everywhere influenced by the individual trees, groups of trees or even small groves, which have been planted at varying times in the past. The grazing of animals and trampling by human beings have also played a great part in determining the nature of the vegetation.

17. On the higher and drier parts, particularly on the gravels, the grasslands consist mainly of bent and fescue grasses, the latter increasing in proportion as the soil becomes more water-holding and less acid in reaction. Much of the higher ground, however, has been invaded by bracken which may well have spread from former woodlands, and there is also some heather. In the damper valleys where the drainage is adequate the purple moor-grass is the most important constituent of the grassland, except on the sites of old cultivated fields. Where the drainage is poor, however, rushes of both hard and common varieties tend to become abundant. Around and in some of the ponds are plants characteristic of aquatic habitats, but these have much decreased recently as a result of human activities.

Fauna

18. A characteristic of the Park is the variety of wild life which it harbours, particularly the deer. The herds of red and fallow deer at once strike the attention of visitors, who derive much pleasure from watching groups of these fine animals, free to range throughout the Park, in natural surroundings. Indeed, the deer were the principal reason for the creation of the Park and for its maintenance in later centuries as a completely enclosed area. Clarendon, in his *History of the Rebellion*, says that "the King (Charles I), who was excessively affected to hunting and the sports of the field, had a great desire to make a great park for red as well as fallow deer between Richmond and Hampton Court".

19. The area probably contained some red deer, and even some fallow deer, when it was first closed. Twenty years later, in 1656 — the earliest recorded survey — the herds were estimated at 1,300 fallow deer and 200 red deer. These numbers appear to have remained relatively stable, apart from some fluctuations in the red deer, until well into the present century. By that time the abandonment of hunting, the need to improve the stock by culling the herds, and the increased use of the Park for recreation, had led to some reductions. It is present policy, based on an appreciation of the available grazing, to maintain the herds at about 400 fallow deer and 150 red deer.

20. Herds of this size have obviously always had, and must continue to have, a marked influence on the appearance of the Park, and complicate the problem of its management, especially for the forester. The grazing pressure of the deer has resulted in some impoverishment of the vegetation and also in the prevention of any natural regeneration of trees in the areas to which they have access; it is itself sufficient to account for the existence of large open areas which, unlike the adjacent commons, are not covered with bushes and scrub. The presence of deer has made it essential that all new plantations and individual young trees should be strongly protected from the browsing of these large animals and from the destruction of bark by the fraying, or rubbing, of their antlers. This is the reason for the bulky

tree guards seen throughout the Park, which may sometimes strike the observer as unnecessarily obtrusive. It is thought that in the past some of the trees may have been somewhat mercilessly and unskilfully lopped in order that their branches might provide food for the deer, but this practice has ceased and a valuable, ungrudged contribution to their diet is still furnished by the mast and nuts of the oaks, beeches and chestnuts, in the autumn.

21. Apart from the deer, rabbits were also a menace to new plantations and helped effectively to prevent natural regeneration. While, for the time being, they have ceased to be a serious threat as a result of myxomatosis, their capacity for reproduction is such that signs of their return in any numbers must be closely watched if the expense of wire netting round all vulnerable trees and plantations is to be avoided. Steps are taken, and will continue to be taken, to keep down the grey squirrel, which have unfortunately superseded the native red squirrel which were not uncommon in the Park thirty or forty years ago. No fewer than five hundred grey squirrels were destroyed in the first half of 1960.

22. There is no recent or comprehensive account of fauna in the Park, but there does exist an interesting though not necessarily comprehensive account in "The Handbook of Richmond Park" by Coryn de Vere, published in 1909. Another most valuable and interesting account of many aspects of the wild life of the Park as it existed just before the Second World War is included in "A History of Richmond Park", published in 1937, by C. L. Collenette, a well-known London naturalist. In addition to the three mammals already mentioned he recorded hares, which still exist, foxes, of which there are no recent reliable records, and badgers, which are believed still to occupy four or five sets. Among the smaller mammals, the stoat and weasel are still occasionally seen and should not be destroyed. The mole is hard to find, even if it still occurs; the water vole seems to have disappeared. In any case little is known of the actual composition of the small rodent population. The hedgehog, always rare, exists in small numbers in the plantations. Shrews were thought never to be common and are now certainly not numerous.

23. Frogs, toads, the smooth newt and the grass snake have all become much rarer. The Pen Ponds hold a variety of fish, largely introduced by restocking, and, together with the smaller ponds, a considerable invertebrate life of which no detailed list appears to have been made.

24. But it is, of course, the birds which, after the deer, make most appeal to large numbers of visitors, and it is remarkable that in spite of the greatly increased use of the Park by the public, their cars, their dogs, and their horses, it is still possible to see about a hundred different species in the course of a year. Going back a great many years, Collenette recorded a total of 132 species, many of them very occasional. His analysis of their distribution was as follows:

Resident and usually breeding - - - -	46
Summer migrants and usually breeding - - -	13
Winter visitors remaining all or part of the winter	16
Regular passage migrants - - - - -	5
Irregular visitors - - - - - - -	52

Breeding species may still be put at between 50 and 60, and the number of irregular visitors seen in any particular year is probably no less than in the past.

25. Successive First Commissioners and Ministers of Works have been sympathetic to the encouragement of bird life in the Royal Parks, and to this fact, and the support of the Department and the Park Superintendent, may be attributed much helpful action in the management of the Parks with this end in view. Full records by official observers are also maintained and, since 1937, forty-nine species not previously recorded have been added to the list. The reports of the Committee on Bird Sanctuaries in the Royal Parks[1] are published biennially and contain details of all species seen and their varying status.

26. The relationship of the flora and fauna with one another and with the soils and physiography of the Park is a matter of some ecological interest and the extent and variety of the Park give opportunities to observe and appreciate the significance of these natural associations.

Forestry and Arboriculture

27. Richmond Park, the most spacious and in many aspects the most important of the Royal Parks, is a national monument of outstanding character. In no other park is the grand cycle of nature so manifest. It provides for the enjoyment of a vast population some of the most striking of the amenities of our historic park-lands. Amid the ever-extending tentacles of urban development it preserves a treasured example of the English landscape which, it is to be hoped, the public and those in authority will long continue in co-operation to protect and maintain. For the most part our English demesnes and parks are famed for the picturesque manner in which they are composed and for their wealth of shapely trees. In Richmond Park, on the other hand, the disposition of open park-land, enclosed woods, commemorative and other plantations, residences and lodges, appears to lack formal composition, and it is this effect, together with the profusion of wild life, which every endeavour should be made to perpetuate.

28. It is important that the management of Richmond Park should follow the well-established tradition of the ancient deer-parks of England. In this, forestry and arboriculture must play a leading part. Like all other living things, trees have their natural span of life, which is dependent to a great extent upon the conditions in which they live and grow. If future generations are to enjoy in their turn the amenities to which we ourselves have succeeded, it is essential to plant trees in a proper range of age-classes to follow on in due succession, the younger plantings progressively replacing trees that grow old, diseased or unsightly. Timely provision for succession is the only method by which to avoid changes of aspect that may appear abrupt when they occur, and consequently distasteful.

29. The dignity of old trees becomes gradually impaired and they lose their vitality as they grow past their prime, in spite of the longevity of certain species. However, many of the old oaks which might be condemned as stag-headed still give the Park the appearance of ancient forest, and in

[1] "Bird Life in the Royal Parks, 1957-58"; Her Majesty's Stationery Office, 1959, Price 2s. 6d.

summer and autumn still add to its general leafy character; furthermore, they are valuable habitats for bird life. But when trees are on the point of complete failure to burst into leaf, or are badly malformed or diseased or have become dangerous, they should be removed. In other cases careful lopping and the removal of dead wood from the crowns may be necessary; but there is an obvious limit to such treatment and the time arrives when an old, decrepit tree falls or must be cut down. Losses of this sort are made less noticeable if younger and more vigorous trees stand near at hand and it is by making provision betimes that they shall so stand that periodic gaps in the landscape are avoided. The same broad principles apply in woodland since, to remain healthy and well-stocked with trees, woods must be thinned in due season in such manner as to foster natural regeneration, and to enable groups of young trees to be planted to form the succession. It is only in this way, or by underplanting with a species tolerant of shade, that woodlands can retain their general character indefinitely into the future. The alternative is to fell the wood and replant — a drastic measure from all points of view.

30. Your Committee is also conscious of the need to adopt a silvicultural policy which will encourage the wild life of the Park, not only in such an especial matter as the protection of the Heronry, which has been so striking a feature of Sidmouth Wood in the past and is now surviving somewhat precariously, but also more generally. In woodland the timing of forestry work has considerable influence on the bird life : for example, in the nesting season when the woodman's activities should be at a minimum. It is also possible by positive steps to encourage particular birds, and it is suggested that, in the Pen Ponds plantations, forestry operations should be directed to the encouragement of wildfowl.

31. Finally, opportunities for emphasizing the character of the Park by landscape treatment must be recognized and seized when they occur. In Richmond Park, which relies for its attraction largely on natural contours and features, such opportunities will not be frequent, but the appearance of the Beverley Brook for instance could be improved in this way. At present the recently straightened course of this brook renders it an unattractive feature of the Park; the stream could be made to fit into its surroundings in a more pleasing way by judicious planting of willows and alders, some of which has already been carried out.

Trees and Shrubs

32. As described (page 5), the soils within the Richmond Park area are, in general, lacking in fertility. Nevertheless they support the common native hardwood trees, many of which attain large size. Your Committee is opposed to and has advised against the planting of exotic species, with rare exceptions. Conifers are also to be avoided, except Scots and Corsican pines where these trees are already growing successfully or when they are needed for nursing frost-tender species — such as oak, ash and beech. The area is now stocked with native or long-established introduced species, mainly oak, elm, beech, lime, hornbeam and sweet chestnut, although some Turkey oak, horse chestnut, sycamore and Norway maple have been also introduced here and there. Poplar, willow and alder are also present, with some wild cherry, hawthorn and other fruit-bearing

trees and shrubs attractive to birds. Rhododendron (*Rhododendron ponticum*) is rampant in several of the woods and must in some places be removed; and in general its future growth must be checked if new planting is to succeed. It is desirable so far as practicable that the oak trees for future planting shall be the *Quercus petraea* (or *sessiliflora)* which, by reason of its early flushing and tougher foliage, is usually more resistant to the attack of the defoliating caterpillars of *Tortrix viridana* than the pedunculate species. Both these oaks are indigenous.

33. Exceptions in regard to species have been made in the attractive forest garden now established in the Isabella Plantation, but in your Committee's view this work should not be extended, particularly if it involves sacrificing any more of the well-grown oaks.

34. Detailed recommendations for the treatment of the various areas of Richmond Park, continuing those given in our Second Report, are given in Appendix I, but in conclusion some observations on certain general points are added below.

Protection of Trees

35. As already noted, the herds of deer that afford so much interest and pleasure to visitors add greatly to the forester's responsibilities. All young plantations must be securely fenced and single trees and groups planted in open parkland adequately protected from browsing and the seasonal fraying of antlers by deer of both species. Similarly, any recovery in the number of rabbits will either necessitate active measures of control, or the expense of putting wire-netting around plantings that are vulnerable.

36. Trees and shrubs are prone to a variety of risks and dangers from disease and insect depredation. Except in regard to the choice of species for any given site, little can be done against insect pests. Trees affected by disease, however, ought speedily to be cut out and removed.

37. The most devastating of all dangers to young trees is fire, which may arise through carelessness on the open grass-lands and heather, or in plantations where ground vegetation has not yet been suppressed by the trees. Strategic fire traces are advisable in the more critical places, and the provision of racks of fire besoms is valuable as both a warning and a safeguard.

The Roehampton Freebord

38. Your Committee is concerned about the ease of unauthorized entry along this boundary and the wilful destruction of some of the trees previously planted. The erection of an unclimbable fence along the full length of the Freebord is strongly recommended. It is also recommended that a screen of suitably spaced trees be planted within the park to conceal this exposed position from urban developments.

Car Parks

39. A sign of the times has been the construction of extensive accommodation for visitors' motor cars. Some of these areas are at present unduly

conspicuous in park surroundings. It is considered that limited numbers of suitably placed standard trees should be planted within the new car parking sites to break up their stark bareness and ultimately to afford ornament and shelter. Tbis has already been done at Pembroke Lodge Car Park. It will be obvious that any trees so planted will require to be strongly protected from accidental damage. If more new car parks are required, it is important that they should be sited in places where they will be as inconspicuous as possible.

War-Time Remains

40. Your Committee has previously urged that the removal of the extensive war-time erections in the neigbbourhood of Kingston Gate should be expedited, so that the area of 53 acres which they occupy may be restored to tbe enjoyment of the public and replanted in a manner in keeping with tbe surroundings. We are informed that all traces of this occupation will be cleared away in the near future, and we welcome this decision, as tbe occupation of so large a portion of tbe Park by buildings seriously detracts from its rural character and tbe charm of its landscape. Moreover, the restoration of this area to public use is important in accommodating increasing numbers of week-end visitors, and inhabitants of tbe surrounding areas.

41. There are a few accumulations of war debris still lying in some of the woods. Tbese sbould be cleared away and the sites replanted.

Summary of Recommendations

42. A summary of our recommendations, together with tbose contained in our Second Report, and the action taken on these, is given in the table in Appendix I.

Signed on behalf of tbe Committee

W. L. TAYLOR

(Chairman)

Area	*Principal Recommendations of Second Report (1955)*	*Action Taken*	*Remarks and Further Recommendations*
C. AREA WEST OF ROAD BETWEEN HAM GATE AND EAST SHEEN GATE			
Boundary of Park between East Sheen and Richmond Gates	The Teck plantation should be thinned. Beech should be planted for succession around the gravel pit next to Bog Gate. Part of Conduit Wood should be enclosed and planted up with shrubs to provide undergrowth for birds.	No enclosure so far, otherwise completed	The Teck plantation should again be thinned and underplanted with beech. Continue planting of beech around gravel pit and replace young dead trees with smaller transplants. Thin Conduit Wood and underplant with small beech, individually guarded.
	The Committee examined the tree nursery near East Sheen Gate and noted that in spite of careful attention the oaks were not forming good leaders. The Committee agreed that the worst specimens should be cut off at ground level in an attempt to obtain better growth. The soil in this nursery is poor and lateral shade from the adjacent trees excessive.	This nursery has been discontinued.	Plant up nursery area, if not required for car park. Plant oak in groups between plantation and the Bog: remove dead trees in Sheen Wood and fill up with beech.
Barn Wood	Wych elms should be planted for succession in the northern areas.	Completed	
Saw Pit Plantation	Thin out Spanish chestnuts in thickest part of wood to favour growth of oak. Plant native oaks as space is available; here, and in the Jubilee plantation, and generally to the south of the Queen's Ridge, oaks should be planted in groups, in order to encourage upward growth. The triangular plantation should be fenced against rabbits and deer and alders and poplars planted therein.	Group planting not yet possible; otherwise completed	Group planting still desirable as trees become available. Plant blackthorn for cover in triangular plantation, and more willow to fill gaps on waterside.
Sidmouth Wood	Plant oak and Spanish chestnut for succession where spaces permit; thin out Spanish chestnut to encourage full growth. Fill in open areas of wood south of the public footpath with Spanish chestnut, oak *(Quercus cerris)*, beech and some Scots pine.	Planting proceeding on North side: none yet on South.	Continue planting as appropriate. The Committee noted a quantity of war-time debris in the wood and urge that it should be removed or suitably mounded.

Queen Elizabeth Plantation	The Committee noted extensive rabbit damage in this plantation and also that the native oak planted was not growing satisfactorily; specimens of Turkey oak were in much better shape. The worst trees should be removed and bushy trees pruned; replace oak so removed, but generally, the trees should be planted more closely together to promote height growth.	Completed.	
Pen Ponds Plantation	This plantation was in reasonable condition, though there was heavy undergrowth of rhododendron.	No action.	Rhododendron is now excessive and should be drastically cleared at an early date to open up vistas and encourage undergrowth, leaving merely a fringe to break up the outline of the fence.
Ham Bottom	The slopes between the road and the stream to be interplanted with berried shrubs and oak for succession. The banks of the stream to be appropriately planted up with alder.	Completed.	Continue line of hornbeam, interspersed with thorn. Take out dead alder and replace; plant few willow for succession. Plant elm for succession between Ham Cross and Gate.

D. AREA SOUTH OF ROAD BETWEEN HAM GATE AND ROBIN HOOD GATE

Prince Charles' Plantation	Much of the oak in this plantation failed, owing to extensive frost damage. The site was damp and the Committee did not consider it merited extensive work. Trees were overgrown when planted and were planted too far apart. It was recommended that the site should be drained, when further consideration could be given.	Drainage completed.	Exotic flowering shrubs should be removed.
	The adjacent circular plantation of birch and oak to the north was in better condition and required only the removal of the birches at the centre. Those on the outside of the plantation might be retained for reasons of amenity.	No action.	Trees in the Gibbet Wood area should be thinned to encourage crowns and underplanted, mainly with elm. Some small beech should be planted towards Isabella Plantation.

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D. AREA SOUTH OF ROAD BETWEEN HAM GATE AND ROBIN HOOD GATE

Prince Charles' Plantation	Much of the oak in this plantation failed, owing to extensive frost damage. The site was damp and the Committee did not consider it merited extensive work. Trees were overgrown when planted and were planted too far apart. It was recommended that the site should be drained, when further consideration could be given.	Drainage completed.	Exotic flowering shrubs should be removed.
	The adjacent circular plantation of birch and oak to the north was in better condition and required only the removal of the birches at the centre. Those on the outside of the plantation might be retained for reasons of amenity.	No action.	Trees in the Gibbet Wood area should be thinned to encourage crowns and underplanted, mainly with elm. Some small beech should be planted towards Isabella Plantation.

Area	*Principal Recommendations of Second Report (1955)*	*Action Taken*	*Remarks and Further Recommendations*
D — *continued*			
Isabella Plantation	The Committee did not favour a proposal to lighten the oak canopy in the garden area and would prefer to cut more *Rhododendron ponticum* if need be.	No action.	The development of the forest garden is noted, but further extension of it is not recommended. The need to control rhododendron in the plantation generally is emphasized. The east side should be cleaned up and underplanted with beech.
Coronation Plantation (1953)	The beech planted in 1953 seemed in good shape, though they had not yet begun to produce large buds. For purposes of future amenity the trees require interplanting to promote clear height growth.	Interplanted with beech	
1902 Coronation Plantation and adjacent area	The plantation should be thinned out, leaving best trees of all species. The adjacent pond to the north, when released by the War Office, should be fenced as a bird sanctuary and the verges planted with willows. The adjacent oak wood to the north (High Wood, etc.) should be filled up with well-protected oaks in groups as space permits.	Thinning completed	After further light thinning underplant with beech generally, alder or Norway maple in damp areas. In High Wood take out decrepit trees and introduce oak, as available, and thorn.
Kingston Hill, Park Boundary	Steps had already been taken to complete the fine beech avenue running from the car park south-westwards to Ladderstile Gate. The work should be continued as labour is available. Scots pine should be planted for succession in the pine areas outside the camp gates.	Beech planting continued but no Scots pine planted yet	At Broomfield Hill either plant small groups of oak for succession to mutilated trees on north-east side or extend wood down hill. Thin larches on hill top to encourage crown development.

Appendix II

A List of the Plantations in Richmond Park, with their History

(i) *East Sheen (Sheen Wood).* Planted in 1819. Opened to the public in 1905. Now consists predominantly of oak, with a few elm and ash.

(ii) *Sheen Cross Plantation.* Also planted in 1819. Species as in Sheen Wood.

(iii) *Spankers Hill.* The south-east slope was planted in 1819, the western slope in 1824, the north-east in 1877. In 1937 Collenette[1] described the trees as including oak, beech, sweet chestnut, sycamore, Scots pine, acacia, larch and spruce. Oak is now the predominant species, with some pine. The western part of the plantation, and walks through the wood, were opened in 1909; the whole was opened in 1950.

(iv) *Sidmouth Wood.* The area north of the Driftway was planted in 1823, south of the Driftway in 1830. The Driftway itself was opened to the public in 1906. This plantation consists predominantly of oak, sweet chestnut, birch and spruce, with some pine.

(v) *Pond Plantation.* The plantation round and south of Pen Ponds has been extended several times. The east side of the Pond was planted in 1824, and the west and south areas in 1865. In 1869 osiers were planted in the bog. In 1902 and 1903 Lombardy poplars were planted on the west side of the Pond, and there was further planting in 1904. This plantation was surveyed after the war, when its predominant species were oak, birch and spruce; it appeared to be less than fully stocked, and the spruce was dying. The dead and dying spruce was therefore removed and replaced with moisture-loving trees.

(vi) *Kingsfarm Plantation.* Planted in 1825.

(vii) *Kingston Hill Plantation.* Planted in 1826.

(viii) *Kidney Wood.* Planted in 1829. Now unenclosed and consisting predominantly of oak.

(ix) *Conduit Wood.* Planted in 1829 and opened to the public in 1904. It is predominantly oak.

(x) *Ham Belt.* Planted in 1829. Its predominant species is oak with some elm.

(xi) *Round Plantation.* A plantation of this name was planted in 1831, and a mid-nineteenth-century map shows a round plantation of this date a little way in from Ladderstile Gate. As this plantation is not mentioned in a list of enclosures of 1904, it would appear to have been thrown open some time in the latter half of the nineteenth century.

(xii) *Isabella Plantation.* The central and north-west area was planted in 1831, the north-east part in 1845 and the southern parts in 1861 and 1865: a small central area, originally used as a nursery, was planted about 1927. The waterside walk through this wood was opened in 1953. The predominant species here are oak and birch.

(xiii) *Killcat Wood.* This plantation was planted in 1864 and opened to the public in 1904. It is almost entirely oak.

(xiv) *White Lodge Plantation.* Planted partly in 1873, partly in 1879. Predominant species oak, sweet chestnut and birch, with a few larch.

(xv) *Sawpits Plantations.* Western Sawpits was planted in 1873/4, Eastern Sawpits in 1874/5. Predominant species oak, birch and sweet chestnut.

(xvi) *Broomfield Hill Plantation (Gibbet Wood).* Planted partially (top of hill) in 1878, the rest in 1888. Now unenclosed. Predominant species beech, oak and sweet chestnut, with a few larch.

(xvii) *Lawn Plantation.* Planted in 1883. Now unenclosed. Predominant species oak, sweet chestnut and birch, with a few larch.

(xviii) *Jubilee Plantation.* Planted in 1896/97. Predominant species oak and sweet chestnut.

(xix) *King's Clump.* Planted in 1901.

(xx) *Coronation Plantation 1902.*

[1] C. L. Collenette: *op. cit.*, page 58.

(xxi) *Teck Plantation.* Planted in 1905 with oak, beech, sweet chestnut, birch, hornbeam, hazel and some maple, lime, ash, whitebeam, golden elm and firs. Beech, sweet chestnut and birch now predominant.

(xxii) *Coronation Plantation 1911.*

(xxiii) *George V Plantation.* Twenty-five oaks were planted here in 1935.

(xxiv) *Tercentenary/Coronation Plantation.* This was established in 1937 by the planting of 100 oaks.

(xxv) *Victory Clump.* This consists of 25 trees planted in 1946.

(xxvi) *Queen Elizabeth Wood.* In 1947 nearly 2,500 trees were planted here. More than half of these were oaks (English, American, red, Turkey, palustris and scarlet) while the remainder included maple, beech, sycamore, hornbeam, horse chestnut, birch, rowan, cherry and acacia.

(xxvii) *Prince Charles' Spinney.* In 1949 more than 5,300 trees were planted here. More than half of them were oak: the remainder include maple, beech, hornbeam, sycamore, birch, ash, whitebeam, horse chestnut and various flowering trees.

(xxviii) *Coronation Plantation 1953.* This consists mainly of common beech, with some copper beech; about 850 trees were planted in all.

(xxix) *Unidentifiable woods and plantations.* Two plantations planted in the nineteenth century cannot now be identified: Roehampton, planted in 1825, which may refer to a belt along the Park boundary (the only plantation in the Roehampton area now identifiable being Kingsfarm, which is separately mentioned): and Kiln, planted in 1860 — the only place where records indicate a kiln once to have existed was at Killcat Corner, the plantation at which is separately mentioned. There are also references to a Slipsbatch Wood, which cannot be identified. It is said to have borne 67 trees on an acre of ground in 1874 and 66 in 1901. It could have been one of the George III plantations. These unidentifiable woods must long have been unenclosed, and by now have probably merged with the trees on the open parkland.

Appendix III

The Soil Map of Richmond Park

The accompanying map illustrates the distribution of soils in the Park. There are nine groups of soils; descriptions of these, with the range of variations to be expected, are given below.

Group 1 is confined to the London Clay slopes with little or no sandy drift. The greatest single area of it runs from near Conduit Wood via Bog Lodge and the Polo Ground to Killcat Corner; it also occurs near the western boundary along the steep slope between Richmond and Kingston Gates, on the upper slopes of the golf courses, and in several smaller areas near the centre of the Park. It consists of two members wbich it has proved impracticable to map separately, of which the chief characteristics are fine texture and drainage impedance. Their differences lie in the origin of the parent material and the degree of impedance as reflected in the coloration of the profile. One of them is developed from London Clay weathered *in situ* with little or no drift; this bas a pinkish brown colour and is usually overlain by a horizon with grey gleying on aggregate faces and yellowish hrown mottling within the aggregates, indicating a zone of drainage impedance. The other component has developed in a London Clay drift. The brown colour typical of the weathered London Clay is not reacbed within the soil profile, which is predominantly grey and has greater and deeper drainage impedance.

Group 2 is confined to the elevated level surfaces at Pembroke Lodge, Ladderstile Gate, hehind Bog Lodge, at East Sheen Gate and White Lodge, with smaller units elsewhere. It is characterized by coarse textures, stoniness and free drainage, although water held up hy the underlying London Clay is probably always within 5 ft. of the surface.

Group 3 is developed on a sandy drift 30 in. or more in depth, which is probahly derived from the terrace deposits. About half of it occurs near to or at the periphery of the southern section of the highest terrace, near Tbatchedhouse Lodge, south of the woodland garden and in Gibbet Wood; elsewhere it occurs in small scattered patches.

Group 4 occurs mostly on the slopes below the highest terrace level and tbe greater part of it is found in the central area of the Park, south and west of the Pen Ponds. It occurs where the underlying London Clay is overlain by a sand or sandy loam drift and has a broad range of variation lying between Group 1, developed on clay without drift, and Group 3, of which the subsoil is sandy to at least 30 in. Effective separation on the map is impracticable owing to its erratic spatial variation. The depth of drift varies hetween 10 in. and 30 in. Much of the scenic bracken-with-oaks vegetation is developed in this group.

Group 5. Adjacent to the areas mentioned under Groups 3 and 4 are certain low-lying areas containing an accumulation of sandy drift. The main characteristics of the group are sandy texture to 24 in. at least, and very poor drainage resulting from its depressional position in tbe London Clay, this heing aggravated in places by the presence of a clayey gravel with well-developed iron pan.

Group 6. At the foot of slopes occupied by Group 1, on either side of tbe Beverley Brook alluvium and along tbe western boundary of the Park, is a deposit consisting mainly of a London Clay drift with additional alluvial or colluvial sandy material, overlying gravel. Top-soil texture is loam to clay loam upon fine sandy clay loam to fine sandy clay, this resting on gravel. Impedance of drainage is frequently evident up to the surface. Near the new course of Beverley Brook the profile becomes sandier in texture and beside this stream at Killcat Corner intermixed alluvial and colluvial material is exposed. The lowest part of the depression drainage into the Pen Ponds comes within this group.

Group 7. This group varies very little and is confined to recent alluvium in the vicinity of Beverley Brook and in the depression at Ham Gate. It is very poorly drained; its other chief characteristic heing a grey silty clay horizon appearing at 8-12 in. from the surface.

Group 8 occupies a very small area near East Sheen Gate and is a transitional Complex characterized by mainly coarse texture, with impeded drainage in the lower part of the profile.

Group 9. The steep slope above the carriageway at Thatchedhouse Lodge, which continues to ahove Kingston Gate, is marked by an outcrop of the Claygate Beds consisting of grey laminated sand and clay. There has heen a considerable downwash of sandy and stony material on to this surface from the gravel terrace above, resulting in a Complex of soils showing a great variation in a small area. Being creep soils developed on sand, gravel and clay, they usually exhibit marked variation in texture within the profile.

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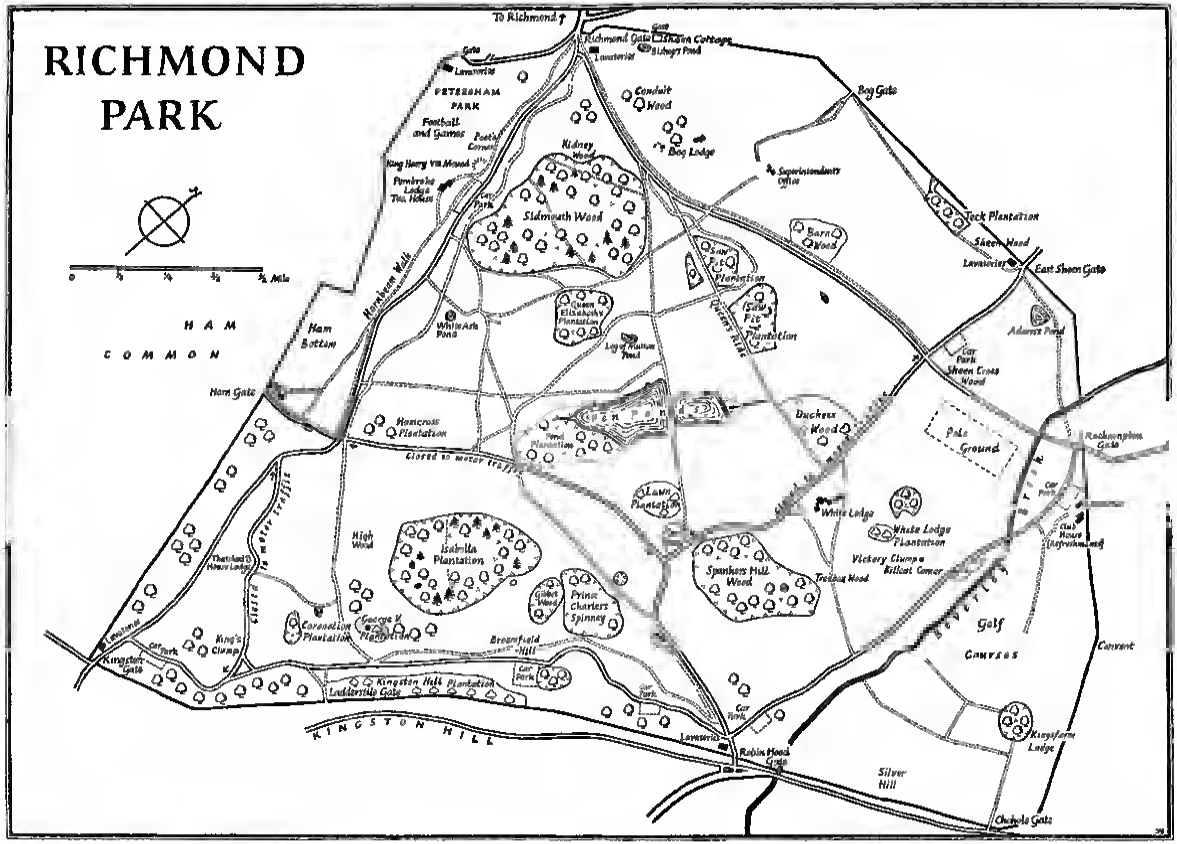

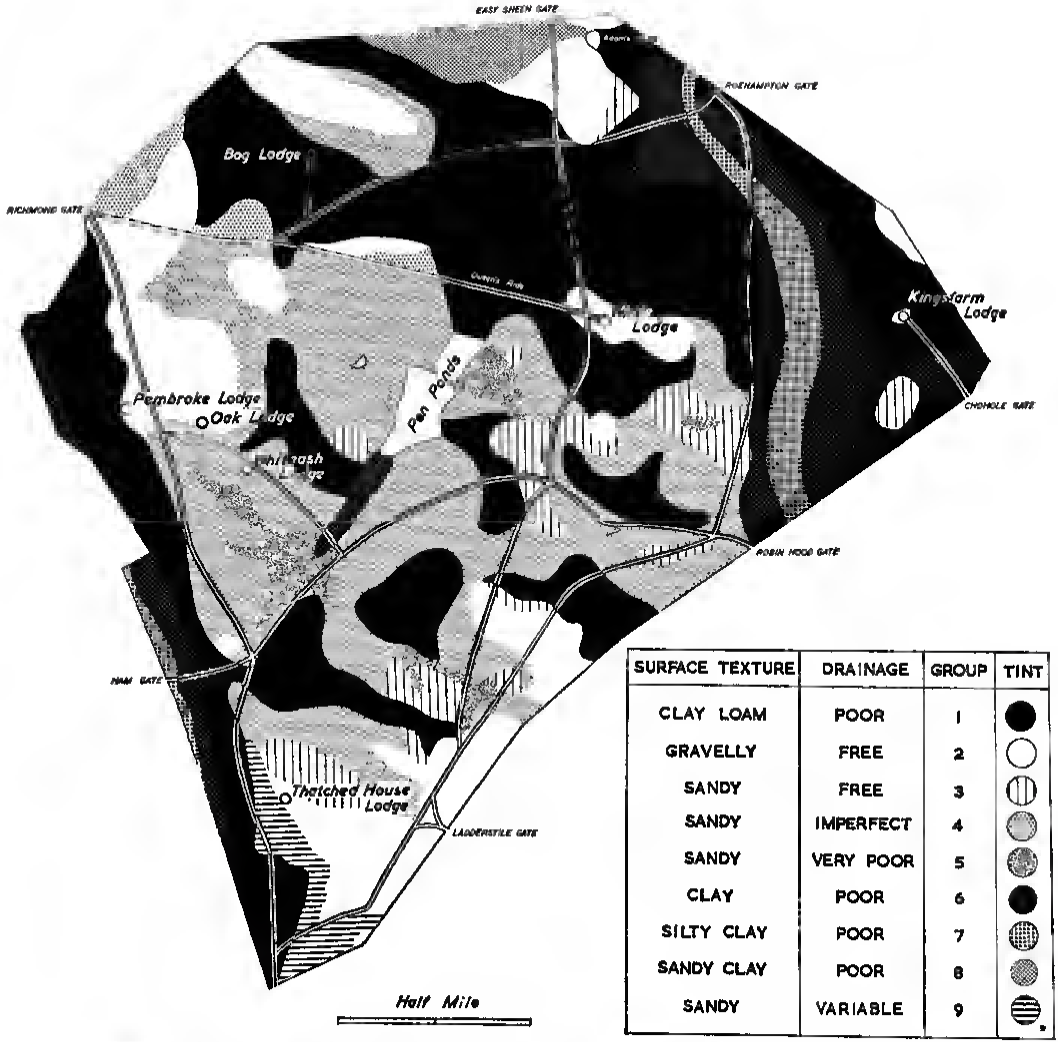

SURFACE TEXTURE	DRAINAGE	GROUP	TINT
CLAY LOAM	POOR	1	
GRAVELLY	FREE	2	
SANDY	FREE	3	
SANDY	IMPERFECT	4	
SANDY	VERY POOR	5	
CLAY	POOR	6	
SILTY CLAY	POOR	7	
SANDY CLAY	POOR	8	
SANDY	VARIABLE	9	